REMARKS

INTRODUCTION

In accordance with the foregoing claims 1, 5, and 11 have been amended. No new matter is being presented. Therefore, claims 1-36 are pending and under consideration. Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §112

In the Office Action, at page 2, claims 1-36 were rejected under 35 U.S.C. §112, second paragraph as being indefinite. The Examiner suggested that the alternative language such as "and/or" statements be removed. However, applicants note that there is no such requirement in the Manual of Patent Examining Procedure (MPEP) requiring such language to be removed. Indeed, according to MPEP 2173.05(h), "alternative expressions using 'or' are acceptable." Therefore, applicants respectfully request that the rejection be withdrawn.

REJECTION UNDER 35 U.S.C. §102

In the Office Action, at page 2, claims 1, 2, 4, 5, 8, and 10 were rejected under 35 U.S.C. §102(b) as anticipated by Sheth et al. This rejection is traversed and reconsideration is requested.

Claim 1 recites a resin evaluation method for an injection molding machine. The method comprises setting analysis conditions including an injection velocity condition and a resin temperature condition, performing injections of resin using the injection molding machine on the set analysis conditions, and obtaining a degree of resin-temperature dependency of a resin pressure and/or a degree of velocity or flow-rate dependency of a resin pressure based on a relationship between the resin pressure and a screw position or a relationship between the resin pressure and an elapsing time from a start of each injection obtained in said injections of resin.

Similarly, claim 5, recites setting analysis conditions including an injection velocity condition and a resin temperature condition, performing injections of resin using the injection molding machine on the set analysis conditions, and obtaining an interdependency relation of the resin pressure with respect to the resin temperature and an injection velocity or a flow rate of resin based on a relationship between the resin pressure and a screw position or a relationship between the resin pressure and an elapsing time from a start of each injection in the injections of resin.

In contrast, Sheth relates to basic data gathering procedures for an adaptive injection molding control in which melt temperature variations are compensated for. As such, Sheth discusses a pressure-volume-temperature (PVT) testing procedure to determine basic data on a material being molded. According to the procedure in Sheth, tests on the molding material are run at varying hydraulic pressures over a range of melting temperatures to determine specific volumes of the material. *See Sheth, page 92, middle of left column.*

Regarding the rejection of claim 1, the passage in Sheth, which is referred to by the Examiner, merely mentions that that pressure-volume-temperature (PVT) data are gathered using an injection molding machine. Indeed, Sheth fails to discuss obtaining a degree of resin-temperature dependency of a resin pressure and/or a degree of velocity or flow-rate dependency of a resin pressure based on a relationship between the resin pressure and a screw position or a relationship between the resin pressure and an elapsing time from a start of each injection obtained in said injections of resin, as claimed in claim 1. Therefore, Sheth does not provide the advantage of the presently claimed invention, that is, that practical results of resin characteristic measurements can be obtained.

Moreover, regarding the rejection of claim 5, Sheth fails to disclose obtaining an interdependency relation of the resin pressure with respect to the resin temperature and an injection velocity or a flow rate of resin based on a relationship between the resin pressure and a screw position or a relationship between the resin pressure and an elapsing time from a start of each injection in the injections of resin, as claimed in claim 5. As above, Sheth does not provide the advantage of obtaining practical results of resin characteristic measurements.

Indeed, the Office Action merely alleges that Sheth obtains a degree of resin-temperature dependency of a resin pressure and shot size. Applicants respectfully assert that even if this allegation were true, claims 1 and 5 still define over the alleged disclosure of Sheth. Thus, claims 1 and 5 define over the reference and the rejections of these claims are believed to be overcome.

Regarding the rejections of claims 2, 4, 8, and 10, these claims are dependent on claims 1 and 5, respectively, and include all of the features of these claims plus additional features which patentably distinguish over the prior art. For example, claim 3 recites that "the relationship between the resin pressure and the screw position or the elapsing time from a start of each injection are expressed by the resin pressure at set screw positions or the resin pressure at set points in time elapsing from a start of each injection," and claim 6 recites that "said interdependency relation is obtained according to an equation expressing the resin pressure using a power function of the injection velocity or the flow rate of resin, and an exponential function of the resin temperature." Therefore, it is submitted that these claims patentably distinguish over the prior art.

In the Office Action, at page 3, claims 1-36 were rejected under 35 U.S.C. §102(b) as anticipated by Kamiguchi et al. (EP 1,044,781). This rejection is traversed and reconsideration is requested.

Briefly, claim 11 recites "automatically obtaining an interdependency relation of the resin pressure with respect to the resin temperature and the injection velocity or flow rate of resin based on combinations of the data of the injection pressure, the injection velocity and the resin temperature in the injections."

Claim 17 recites "analyzing means for obtaining a degree of resin temperature dependency of the resin pressure and/or a degree of velocity or flow rate dependency of the resin pressure based on the resin pressure at set screw positions or at set points in time elapsing from a start of injection."

Similarly, claim 22 recites "analyzing means for obtaining an interdependency relation between the resin pressure with respect to the resin temperature and an injection velocity or a flow rate of resin based on the detected resin pressure, the injection velocity and the resin temperature at set screw positions or at set points in time elapsing from a start of each injection."

Finally, claim 28 recites "analyzing means for analyzing interdependency relation of the resin pressure with respect to the resin temperature and the injection velocity or a flow rate of resin based on data stored in said storing means."

Kamiguchi, merely relates to a method of obtaining an injection pressure curve as a molding condition using a resin flow analysis. According to the method, a resin pressure curve and an injection pressure curve are each obtained. From the injection pressure curve and the resin pressure curve, an injection pressure command curve to serve as a molding condition in mass production, is obtained. *See Kamiguchi, in the abstract.*

There is no disclosure in Kamiguchi that relates to the claimed obtaining or analyzing any of the above noted relationships and/or interrelationships. As an example, the claim 11 recitation of "automatically obtaining an interdependency relation of the resin pressure with respect to the resin temperature and the injection velocity or flow rate of resin based on combinations of the data of the injection pressure, the injection velocity and the resin temperature in the injections," is nowhere found in Kamiguchi.

Therefore, claims 1, 5, 11, 17, 22, and 28 define over Kamiguchi. Thus, the rejections of the claims are believed to be overcome.

Regarding the rejections of claims 2-4, 6-10, 12-16, 18-21, 23-27, and 29-36, these claims are dependent on claims 1, 5, 11, 17, 22, and 28, respectively, and include additional features which patentably distinguish over the prior art. For example, claim 13 recites that "the injection pressure is detected at set positions or set points in time elapsing from a start of injection in each of the injections, and the data of the injection pressure, the injection velocity and the resin temperature are obtained in each of the injection." Therefore, the rejections of these claims are believed to be overcome for at least the reasons set forth above.

In the Office Action, at page 3, claims 1-36 were rejected under 35 U.S.C. §102(b) as anticipated by Nunn (U.S. patent no. 4,850,217). This rejection is traversed and reconsideration is requested.

Nunn relates to a method of obtaining pressure-volume-temperature (PVT) constants for a given material. According to Nunn, an injection molding machine to develop PVT constants for a given material be pressurizing the material in the barrel against the blocked outlet nozzle, measuring the volume during pressurization, and then weighing the pressurized shot after it is purged from the barrel in order to calculate the specific volume of the material. *See Nunn, in the abstract.*

As in the discussion relating to the disclosures of Kamiguchi, Nunn contains no discussion of the claimed obtaining or analyzing any of the relationships or interrelationships between resin pressure, temperature, time, and nozzle position. Therefore, claims 1, 5, 11, 17, 22, and 28 define over the reference to Nunn. Thus, the rejections of these claims are believed to be overcome.

Regarding the rejections of claims 2-4, 6-10, 12-16, 18-21, 23-27, and 29-36, these claims are dependent on claims 1, 5, 11, 17, 22, and 28, respectively, and include additional features which patentably distinguish over the prior art. Therefore, the rejections of these claims are believed to be overcome for at least the reasons set forth above.

NEWLY ADDED CLAIMS

Claims 37-40 are each directed to a resin evaluation method for an injection molding machine comprising setting analysis conditions including an injection velocity condition and a resin temperature condition, and performing injections of resin using the injection molding machine on the set analysis conditions.

Claim 37 is further directed to obtaining a degree of resin-temperature dependency of a resin pressure based on a relationship between the resin pressure and a screw position. Claim 38 is further directed to obtaining a degree of resin-temperature dependency of a resin pressure based on a relationship between the resin pressure and an elapsing time from a start of each injection obtained in said injections of resin. Claim 39 is further directed to obtaining a degree of velocity or flow-rate dependency of a resin pressure based on a relationship between the resin pressure and a screw position. Lastly, claim 40 is directed to obtaining a degree of velocity or flow-rate dependency of a resin pressure based on a relationship between the resin pressure and an elapsing time from a start of each injection obtained in said injections of resin.

Since the prior art does not teach any of the obtaining operations noted above, it is submitted that claims 37-40 are patentably distinguishing over the prior art.

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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Date: June 16, 2004

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